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(19) (CA) APPLICATION FOR CANADIAN PATENT (12)

(54) Strip Floor-Covering for Sports Surfaces, in Particular
Synthetic-Grass Surfaces

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Notice: This application is as filed and may therefore contain an
incomplete specification.



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A B S T R A C T

A floor-covering web designed as a pile fabric for sports surfaces, in particular synthetic turfs, with a supporting web (10) comprising openings and therefore being water-permeable, pile elements (12) secured to the supporting web and forming the pile as well as a plastic layer (14) arranged on the underside of the supporting web, this layer being elastic in the direction of its thickness; to increase the water-retention capacity of the floor-covering web, the plastic layer is produced from an open-celled foamed plastic and a storage layer (16) having water-storing properties is arranged on the underside of the foamed plastic layer.

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**Floor-Covering Web for Sports Surfaces,
in particular Synthetic Turfs**

The invention relates to a floor-covering web designed as a pile fabric for sports surfaces, in particular a synthetic turf, with a supporting web comprising openings and therefore being water-permeable, pile elements secured to the supporting web and forming the pile as well as a plastic layer arranged on the underside of the supporting web, the plastic layer being elastic in the direction of its thickness.

So-called synthetic turfs have gained acceptance to a considerable extent as floor or ground coverings for sports surfaces. These synthetic turfs are knitted, weft-knit, woven or tufted textile products which are produced from plastic tapes (ribbons) and/or plastic yarns and are in the form of a so-called pile fabric. The pile elements simulating the blades of grass are mostly produced from plastic tapes or ribbons which penetrate the supporting web and are fixed in position in this web by a textile interlacing and/or (the latter, in particular, in a so-called tufting fabric) by a back coating of part or all of the surface of the supporting web by means of a plastics mass.

Since a requirement, in particular, of sports surfaces laid outdoors is that the floor or ground covering is permeable to water, the supporting web of known synthetic turfs has openings, and in the case of a partial back coating the latter does not eliminate the water-permeability of the floor covering. Floor coverings of the type mentioned at the outset are, however, also

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known which have a back coating over their entire surface in the form of a plastic layer which is elastic in the direction of its thickness and which can be a plastic layer made from closed-cell foamed plastic; in order to bring about the water-permeability of the floor covering in such a case, the back coating must be perforated.

All these known, water-permeable floor coverings described in the above have the disadvantage that water collecting on the surface of the floor covering passes through the floor covering relatively fast and in an uncontrolled manner and the floor covering then dries out again relatively quickly. It has, however, been shown that the playing conditions of a floor covering of the type in question, in particular of a so-called synthetic turf, depend quite substantially on whether the surface of the covering is somewhat damp - this results in considerably improved playing conditions.

The object underlying the invention was to provide a water-permeable floor covering designed as a pile fabric for sports surfaces, in particular a synthetic turf, which essentially has the same advantageous properties as the known floor coverings of the type described above but retains the desired playing conditions for a longer time than the known floor coverings after the surface of the covering has been watered.

Proceeding on the basis of a floor covering of the type mentioned at the outset, this object may be accomplished in accordance with the invention in that a water storage means and a layer are provided beneath the supporting web, this layer causing the water from the water storage means to be transported

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back to the upper regions of the floor covering during the use of the floor covering. It is, in particular, suggested for accomplishing the cited object that the plastic layer of a floor-covering web of the type mentioned at the outset be formed from an open-celled foamed plastic (e.g. latex foams, polyurethane foam, sponge rubber or the like) and a storage layer (e.g. fiber fleeces, needlefelts, heavy woven fabric, open-celled foams or the like) having water-storing properties be provided on the underside of the foamed plastic layer.

Water collecting on the upper side of the floor covering when it rains or when the floor covering is watered passes through the openings of the supporting web into the open-celled foamed plastic layer and, from there, reaches the storage layer due to the force of gravity and/or a capillary action. This storage layer absorbs the water until its storage volume is exhausted; water collecting on the surface of the covering, which can no longer be stored, passes through the storage layer and exits downwardly from the floor covering. It is then drained into the substructure or flows laterally away over the surface of a water-impermeable substructure. Once the rain has stopped or water is no longer being sprayed onto the floor covering, its surface dries out relatively quickly, e.g. due to the sun and wind. However, when the inventive floor covering is played on, the open-celled foamed plastic is pressed together by pressure exerted on the surface of the covering (e.g. by the foot of a player) and this causes the surface of the covering to be moistened again somewhat so that the desired gliding effect by means of a film of water again results (pump and play system). This procedure is repeated until the storage layer can no longer fill the open-celled foamed plastic with capillary water.

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Tests on a sports surface covered with the inventive floor covering have shown in the summer months, with the climate in Central Europe, that the inventive floor covering remains playable the entire day after it has been watered once, i.e. the desired playing conditions are maintained. In comparison with conventional floor coverings, the inventive floor covering requires only a third to a quarter of the water otherwise needed for watering with the known floor coverings to bring about the same playing conditions.

The storage layer can likewise be an open-celled foamed plastic layer. For this reason, in an inventive floor-covering web the foamed plastic layer bringing about the pump-back effect and the storage layer can be of the same type and even form a single layer. In preferred embodiments of the inventive floor covering, the storage layer is, however, formed from a fiber fleece which can adhesively store a multiple of its own weight in water. In this respect, fiber fleeces are preferred which are made from a non-decaying material and this does, of course, apply, in addition, to all the elements of the inventive floor covering.

As in known floor coverings, the pile elements in preferred embodiments of the inventive floor covering also have anchoring feet arranged on the underside of the supporting web, whereby it is particularly advantageous for these to be located between the supporting web and the foamed plastic layer. In this way, the foamed plastic layer which is, in particular, bonded to the rear side of the supporting web serves to secure the pile elements in an improved manner in the supporting web, and the anchoring feet of the pile elements are covered by the foamed plastic layer and the storage layer so that when the floor covering is laid on a

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rough surface they are not subject to the risk of being chafed through owing to the floor covering being played on.

Butadiene styrene is recommended, in particular, as plastic for the foamed plastic layer bringing about the pump-back effect; in order to obtain a floor covering which can be easily and completely recycled, supporting web, pile elements, foamed plastic layer and storage layer in other preferred embodiments of the inventive floor covering are, however, made of the same plastics material.

As already mentioned, it is recommended that the open-celled foamed plastic layer bringing about the pump-back effect and the storage layer be bonded to the rear side of the supporting web. In this respect, it must, however, be ensured by the type of bonding, in particular by a correspondingly selected pattern of a connecting layer, that water collecting on the surface of the covering can pass through the supporting web, the foamed plastic layer and the storage layer.

Additional features, advantages and details of the invention result from the attached, schematic illustration and the following description of a particularly preferred embodiment of an inventive floor covering: the drawing shows a section through the floor covering designed as a tufted fabric.

The drawing shows a supporting web 10, which is a tufting base fabric, in particular a woven fabric made from plastic tapes. Pile elements 12 are anchored in this web; these elements are inserted into the supporting web 10 by tufting and are formed by plastic tapes. They are of an approximately U-shaped design in

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the side view and each form an anchoring foot 12a on the underside of the supporting web.

A foamed plastic layer 14 is bonded to the underside of the tufted fabric 10, 12; this layer consists of an open-celled foamed plastic and is, in accordance with the invention, elastic in the direction of its thickness. Finally, a layer of fiber fleece 16 is bonded to the underside of the foamed plastic layer 14 and forms the inventive water-storage layer. The desired storage capacity can be achieved and adjusted by the thickness, density, structure and the type of fibrous material used for the layer of fiber fleece 16.

The pores of the foamed plastic layer 14 allow a transport of water effected by the force of gravity through the foamed plastic layer 14 into the layer of fiber fleece 16 and, as a result of the capillary action or the pumping effect occurring when the floor covering is played on, back from the layer of fiber fleece 16 into the actual synthetic turf layer 10, 12 and, in particular, through its water-permeable supporting web 10 to the surface of the synthetic turf layer. With respect to the water-permeability of the supporting web 10 it is to be noted that this can be ensured and adjusted in a variety of ways, for example by means of relatively thick needles during tufting, the type and density of the textile material used for the production of the supporting web 10, e.g. the width of the plastic tapes used for the production of a woven fabric and the spacings between the warp and weft threads formed by the tapes, as well as by the type of finishing possibly used for the supporting web material; these are, however, known measures and so a detailed explanation of them is not required.

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Annex to the Preliminary International Search Report for PCT
Application PCT/EP92/02532

P A T E N T C L A I M S

1. Floor-covering web designed as a pile fabric for sports surfaces, in particular synthetic turfs, with a supporting web (10) comprising openings and therefore being water-permeable, pile elements (12) secured to said supporting web and forming the pile as well as a plastic layer (14) arranged on the underside of the supporting web (10), said layer being elastic in the direction of its thickness and made from an open-celled foamed plastic, characterized in that a storage layer (16) having water-storing properties and made from a fiber fleece, a needlefelt or a heavy woven fabric is arranged on the underside of the plastic layer (14) and the plastic layer (14) is designed such that it has a pumping effect causing a transport of water from the storage layer (16) to the supporting web (10) when the floor-covering web is walked on.
2. Floor-covering web as defined in claim 1, characterized in that the pile elements (12) have anchoring feet (12a) arranged on the underside of the supporting web, said feet being located between supporting web (10) and foamed plastic layer (14).

REPLACEMENT SHEET
IPEA/EP

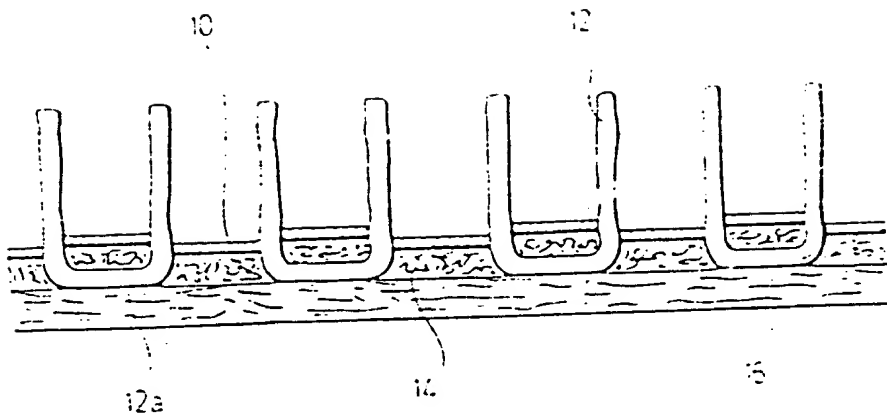
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3. Floor-covering web as defined in claim 1 or 2, characterized in that supporting web (10), pile elements (12), foamed plastic layer (14) and storage layer (16) consist of the same plastics material.
4. Floor-covering web as defined in any or several of claims 1 - 3, characterized in that the foamed plastic layer (14) consists of butadiene styrene.

REPLACEMENT SHEET
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